Space Weather Forecast

Issued on Saturday, 30 March 2024 at 12:36 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate flares expected (R1-R2 Blackouts) with chance of Strong flares (R3+ Blackouts), easing Day 3 (01 Apr).

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Activity has been Moderate with two Moderate-class flares, the largest of which peaked at 29/1934 UTC from the large region on the southwest limb. This remains a very large and relatively complex sunspot group. There is now a very restricted viewing angle of the group as it approaches the western limb, but magnetic complexity still remains evident. The other spots are all small and simple unipolar regions.
There have been a number of Coronal Mass Ejections (CMEs) observed in coronagraph imagery over the past 24 hours, and analysis is ongoing to determine if there is any potential Earth-directed component.

Solar Wind / Geomagnetic Activity: The solar wind was indicative of ambient wind conditions, but with hints of an incoming fast wind in recent hours. Winds speeds varied between 320-380 km/s. Interplanetary Magnetic Field was weak but on an increasing trend. The north-south component fluctuated weakly. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) continued to be very slightly above background, well below Radiation Storm levels. This is due to the declining effects of the Moderate Radiation Storm that peaked on 24 Mar.

Four-Day Space Weather Forecast Summary
Solar Activity: Moderate at first with further Moderate class flares expected, and a chance of isolated Strong class flares from the large sunspot region on the disc. This region is expected to depart the disc late Day 1 (30 Mar) with flare risks reducing significantly. However, any notable Strong flares may remain observable into Day 3 (01 Apr).

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs expected during the forecast period. The current slow wind conditions are expected to slowly increase later Day 1 into Day 2 (30-31 Mar) due to the arrival of a coronal hole fast wind. Wind speeds are likely to ease later in the period.
Geomagnetic activity is expected to be mainly Quiet, but with the chance of Unsettled intervals Days 1-2, perhaps with an isolated Active interval, before easing through Day 3 (01 Apr).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be near background levels, with a slight chance of a further enhancement above the S1/Minor Radiation storm level given any notable flares from the large sunspot on the southwest limb.

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Met Office

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	60	30	20
Very Active	R3 to R5 X	No	30	20	5	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	20	5
Very Active	≥ S3 *	No	5	5	5	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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